PROJECT INFORMATION

Caywood Point Hemlock Wooly Adelgid Suppression and Prevention Project

The USDA Forest Service (USFS) is initiating an environmental analysis process for the proposed Caywood Point Hemlock Wooly Adelgid Suppression and Prevention (HWA) Project pursuant to the National Environmental Policy Act. The project area is located on the Hector Ranger District of the Finger Lakes National Forest (FLNF) in the Town of Lodi in Seneca County, New York (see attached maps). The proposed action is to authorize the application of imidicloprid tablets and basal bark applications of dinotefuran treatment of 300 hemlock trees within a 134 acre area of the Caywood Point Recreation and Education Special Area Management Area (see below for more info).

The objective for this project is to address the current and future predicted HWA induced mortality on the eastern hemlock at Caywood Point and to help limit the further spread of HWA into the Forest (Whitmore and Bohne, 2012). These trees serve as a fundamental characteristic to the visual quality of the Caywood point recreation and special area. The work would be part of a partnership with Northeastern Area/ State and Private Forestry Forest Health Protection specialists and with officials from Cornell University. Due to the uniqueness of Caywood and the relative newness of HWA (at least locally), the project would be monitored closely through subsequent monitoring. The Caywood Point site would serve as a field demonstration site which would provide valuable data on the field application of both insecticides and predator beetles for the control of hemlock woolly adelgid while maintaining the aesthetics and preserve the gene pool of hemlocks at the site. Post treatment survey data would be shared with the Forest Health Protection community and would add to research on HWA treatments.

BACKGROUND

The FLNF encompasses 16,212 acres between Seneca and Cayuga Lakes in the Finger Lakes Region of New York State. An administrative unit of the Green Mountain National Forest, the FLNF is the only national forest in New York, and the only public land that has had an explicit philosophy of multiple-use management. The FLNF has a history of demonstration and education projects. Forest leadership is committed to promoting natural resource management and conservation (USDA Forest Service 2006). The Caywood Point property was acquired in 1997. The 214-acre tract lies between Highway 414 and Seneca Lake in southern Seneca County (see attached maps) and is designated as the Caywood Point Recreation and Education Special Area Management Area (MA) in the 2006 FLNF Land and Resource Management Plan (Forest Plan, pp. 57-59). It is the only National Forest land on the shoreline of Seneca Lake, and one of only six public access points on the lake's 75 miles of shoreline. Caywood Point is managed for recreation and education and is often utilized by the public for hiking, camping, fishing, and hunting. The property slopes toward the lake with a mixture of shrublands and heavily-wooded terrain. Hemlock is the dominant tree in the stands closer to the lake (C77; C88 stands 1, 2, 3, and 6; C89 stands 1 and 2), occurring with pignut hickory, black cherry, and red maple.

A very light HWA infestation was detected in 2008 on the FLNF on overstory and understory hemlocks at the northern drainage of Caywood Point during a survey conducted by officials from Cornell University, FLNF, and volunteer partners. Subsequent hemlock surveys of the FLNF the following spring conducted by Cornell and the Forest Health Protection (FHP) staff confirmed that the HWA infestation was limited to just a few trees at Caywood Point (Souto 2009).

The hemlock woolly adelgid (HWA), *Adelges tsugae* Annand, an invasive insect native to Asia, was first detected in eastern North America in Richmond, Virginia in the 1950s (McClure et al., 1996) and has since spread to over half of the natural range of eastern hemlock (USDA Pest Alert, 2010). Hemlock woolly adelgid weaken hemlock trees by feeding on the nutrient and water solution in the xylem ray parenchyma (Young et al., 1995); weakened trees begin to lose needles within months followed by fine twig and limb dieback after several years of infestation (McClure, 1996). The HWA infestation has resulted in widespread hemlock mortality in the Appalachian range in mid-Atlantic and southern states. Until recently, HWA-caused mortality has been limited in northern New York and New England due to frigid late-winter temperatures which substantially reduce overwintering adelgid populations (Skinner et al. 2003, and references within). However spread of HWA has steadily continued northward in New York and New England, primarily by wind, birds, deer, and other mammals (USDA Pest Alert, 2010). Management and suppression of HWA has focused on chemical treatment and establishing various forms of biological control. Chemicals have been very effective at controlling HWA in small high value hemlock stands. Systemic treatment with the neonicotinoid insecticide imidicloprid has been shown to provide multiple years of protection (Cowles and Lagalante 2009). Despite their effectiveness in high value stands, chemicals cannot be implemented as a long term solution to maintain healthy hemlock on a landscape level.

The US Forest Service has been investing in biological control of HWA since 1992 with the goal of establishing a number of predators and pathogens to lower HWA populations and limit damage to hemlocks. Through partnerships with states and universities, three different species of predatory beetles have been released for the biological control of HWA throughout the range of the infestation in the East (Fig. 2). Most recently, a strain of *Laricobius nigrinus* from Idaho has been released and has begun to establish on HWA populations in New York and New England (Mausel et al. 2010). There have been several attempts at controlling HWA with entomopathogens, however, further research is needed before any wide scale management with fungal pathogens can occur. Successful classical biological control of HWA will require the establishment of a complex of natural enemies and pathogens. Other potential predator beetles and pathogens are constantly being evaluated for release in the United States. Building a suite of natural predators and pathogens is a lengthy undertaking and it is still uncertain whether biological control will be effective at reducing the impact of HWA and preserve hemlock health and vigor.

In the spring of 2009, Natural Resource specialists and scientists from the Green Mountain National Forest, the FLNF, University of Massachusetts, Cornell University, FHP, and New York Department of Environmental Conservation met to discuss HWA management options. Four options were discussed:
1. No management
2. Biological control with predatory beetles
3. Chemical control
4. Tree removal

The team determined that the Caywood Point site was a good candidate for biological control as the infestation was small and that the infested trees were healthy and showing lots of new growth. On August 13, 2009 a letter was furnished to the project file by acting District Ranger Chris Zimmer authorizing the control of HWA within the Caywood Point Recreation and Education Special Area MA with the release of predatory beetles. The Idaho strain of *Laricobius nigrinus* was recommended as the best candidate for release due to its strong potential to survive the Finger Lakes climate. On October

29, 2009, David Mausel from University of Massachusetts released 300 adult *L. nigrinus* at Caywood Point. A single adult *L. nigrinus* was recovered during the first post release survey the following fall showing that the predator beetle had become established on the HWA population (Rosenholm 2010). A single beetle was again recovered near the release site during the 2011 fall survey. Finally, two adult *L. nigrinus* were recovered in the fall of 2012, one near the release site, the other on the opposite side of the northern drainage. The collection of a third generation of *L. nigrinus* has further confirmed establishment and spread of the predator beetle at Caywood Point.

The HWA population at Caywood Point continued to grow through 2011 however and surveys of the region in the spring of 2012 showed significant population expansion (Whitmore, personal communication). Population expansion and hemlock mortality was confirmed at Caywood Point during surveys in the spring and fall of 2012. It is believed that the mild winter of 2012-2012 failed to reduce overwintering HWA, resulting in a massive and damaging HWA population.

Despite the establishment of *L. nigrinus* at the site, it was determined that significant hemlock mortality is expected unless further management is conducted.

PURPOSE AND NEED

The purpose and need for this action is to:

- Implement control measures to suppress HWA within the Caywood Point area and slow dispersal via wind, birds, and mammals to other parts of the National Forest.

- Maintain the diversity, structural integrity, and health of the Caywood Point stands by maintaining the current eastern hemlock trees.

- Provide a regionally important field demonstration / example site which will provide valuable data on the field application of both insecticides and predator beetles for the control of hemlock woolly adelgid. Resulting region-specific information will greatly aid forest managers in making management decisions to reduce HWA risk in both the FLNF and GMNF.

- Highlight a unique education and interpretation opportunity on non-native invasive pests, their effect on hemlocks and the methods used in order to mitigate the pests' effects.

- Enhance and maintain visual resources that characterize the Caywood Point Recreation and Education Special Area MA.

The Forest Plan provides several key points that are the basis for the purpose and need of this action:

  - "Maintain and restore quality, amount, and distribution of habitats to produce viable and sustainable populations of native and desirable non-native plants and animals" (Forest Plan Goal 2, p. 10).
  - "Minimize adverse effects of non-native invasive species on National Forest resources through containment, abatement, and introduction prevention" (Forest Plan 2.2.2 Objective, p.12).

- "Demonstrate innovative, ecologically sound management practices that can be applied to other lands" (Goal 9, p. 14).
- "Establish one site on the Finger Lakes National Forest for demonstration forests, discovery trails, or plots and other "living laboratories" for teacher/non-formal educator use" (Goal 12 Objective, p. 15).
- "Maintain or enhance visual resources such as viewsheds, vistas, overlooks and special features" (Goal 16, p. 16).

In regards to Forest Health and Disturbance Processes the Forest Plan gives direction:

- "Non-native insect and disease pathogens shall be managed using appropriate biological, silvicultural or chemical controls. Chemical controls shall only be used when other methods are ineffective" (Forest Wide Standard S-5 p. 28).
- When it is safe and effective to do so, the Forest Service should use an integrated pest management approach to manage NNIS (Guideline-3, p. 28).
  - Conduct early treatment of new infestations
  - Protect Special Areas

In regards to direction of pests, diseases and non-native invasive species for the Caywood Point Recreation and Education Special Area MA (8.2):

- Chemical and biological controls may be utilized when determined to be less ecologically disruptive than the target pest (Guideline 1, p.58).

If this action is not taken, continual hemlock wooly adelgid populations are likely to increase within the Caywood Point area and cause significant mortality to the hemlock trees that are present there and provide as an additional source for HWA spread. Additionally, non-action would affect the long term forest structure of Caywood Point thereby affecting the visual as well as the ecological qualities present there.

PROPOSED ACTION

The below described proposed actions describe the chemical treatment of ~300 hemlock trees in an area of ~134 acres of Caywood Point on a per individual tree basis. Treatments described below should provide 5-7 years of protection to the treated trees.

The proposed action is to systemically treat large un-infested or lightly HWA infested hemlocks (over 11 inches DBH) with a slow-release tablet formulation of imidicloprid (Coretect). The slow-release tablet formulation is designed to release a full dose over a two year period allowing twice as many trees to be treated per acre at one time. The low dose of imidicloprid is coupled with fertilizer, allowing optimal dose over time while minimizing the risk of contaminating aquatic resources (Cowles 2009). The great advantage of imidacloprid is that one treatment will remain efficacious for seven years or more (Cowles 2009). Coretect tablets have been used to treat stands of high value hemlock on federal, state, and private land in the Mid-Atlantic States, including Great Smoky Mountain National Park, the Delaware Water Gap National Recreation Area, and the Monongahela National Forest (USDA Forest Service, 2011a, 2011b). The Coretect formulation of imidicloprid is registered for use for HWA in New York State (Appendix B).

In addition to the Coretect tablets, current heavily infested large diameter hemlock trees would have a basal bark application of dinotefuran (Safari). Dinotefuran treatment has greater mobility within the hemlock but its efficacy is shorter-lived than imidacloprid. The strategy is to treat the trees in greatest need with dinotefuran so that HWA would be rapidly suppressed, allowing them to recover to the point that they would be able to uptake the slower moving, but longer lasting imidacloprid. Dinotefuran (Safari) is registered for use for HWA suppression in New York State (Appendix B).

Chemical treatments may have an impact on the established biological control predator beetle *L. nigrinus.* Recent laboratory experiments showed lethal and sublethal (intoxication) effects of imidicloprid on non-target predator beetles including *L. nigrinus* (Eisenberg et al, 2010). However, after the effects of initial insecticide treatment, HWA development would be suppressed to the point that poisoned HWA would likely be too small to be a significant food source for developing predators. The potential non-target impacts of imidicloprid treatments in the natural environment are unclear but would undoubtedly impact other organisms consuming treated hemlock tissue. It was recommended to withhold treatment from smaller, more vigorous hemlocks (under 11 inches DBH) that can sustain HWA infestation longer than larger and older trees. This would provide a pesticide-free adelgid resource for developing *L. nigrinus* populations.

FOREST PLAN CONSISTENCY

The Caywood Point Hemlock Wooly Adelgid Suppression and Prevention Project is designed to be consistent with the goals, objectives, and Forest-wide and Management Area Standards and Guidelines as specified in the Forest Plan (outline above). The proposed action would promote the desired future forest condition for the Caywood Point Recreation and Education Area MA. All of the expected environmental effects from this project are anticipated to be within the range of the effects disclosed in the Final Environmental Impact Statement for the 2006 Forest Plan.

ENVIRONMENTAL ANALYSIS

The USFS will consider public comments during the environmental analysis process. The proposed action appears to be in categories that can be excluded from documentation in an Environmental Impact Statement (EIS) or Environmental Assessment (EA) as identified at 7 CFR 1b.3(a)(3) and 36 CFR 220.6(d)(5):

7 CFR 1b.3(a)(3) "Inventories, research activities, and studies, such as resource inventories and routine data collection when such actions are clearly limited in context and intensity."

36 CFR 220.6(d)(5) "Repair and maintenance of recreation sites and facilities. Examples include but are not limited to:

(i) Applying registered herbicides to control poison ivy on infested sites in a campground;

(ii) Applying registered insecticides by compressed air sprayer to control insects at a recreation site complex;

(iii) Repaving a parking lot; and

(iv) Applying registered pesticides for rodent or vegetation control."

The environmental analysis will identify any potential extraordinary circumstances that exist and could result in significant effects to the environment. In accordance with 36 CFR 220.6(b), the following specific resource conditions will be considered:

1. Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species;
2. Flood plains, wetlands, or municipal watersheds;
3. Congressionally designated areas, such as wilderness, wilderness study areas, or national recreation areas;
4. Inventoried roadless areas or potential wilderness areas;
5. Research natural areas;
6. American Indians and Alaska Native religious or cultural sites; and
7. Archaeological sites, or historic properties or areas.

DECISIONS TO BE MADE

After conducting and reviewing the environmental analysis, including public involvement and interdisciplinary resource specialists' input, the Responsible Official will make the following decisions based on the environmental analysis:

1. Whether the proposed project will proceed as proposed, as modified to address issues, or not at all;
2. What specific resource protection or mitigation measures should be implemented as part of the project;
3. Whether the project would have environmental impacts at levels that may require an EA or EIS;
4. What monitoring requirements should be applied to the project.

RESPONSIBLE OFFICIAL

Jodie L. Vanselow, the District Ranger for the Hector Ranger District, is the Responsible Official for the decision on this proposal.

Appendix A
Figure 1—Caywood point vicinity map

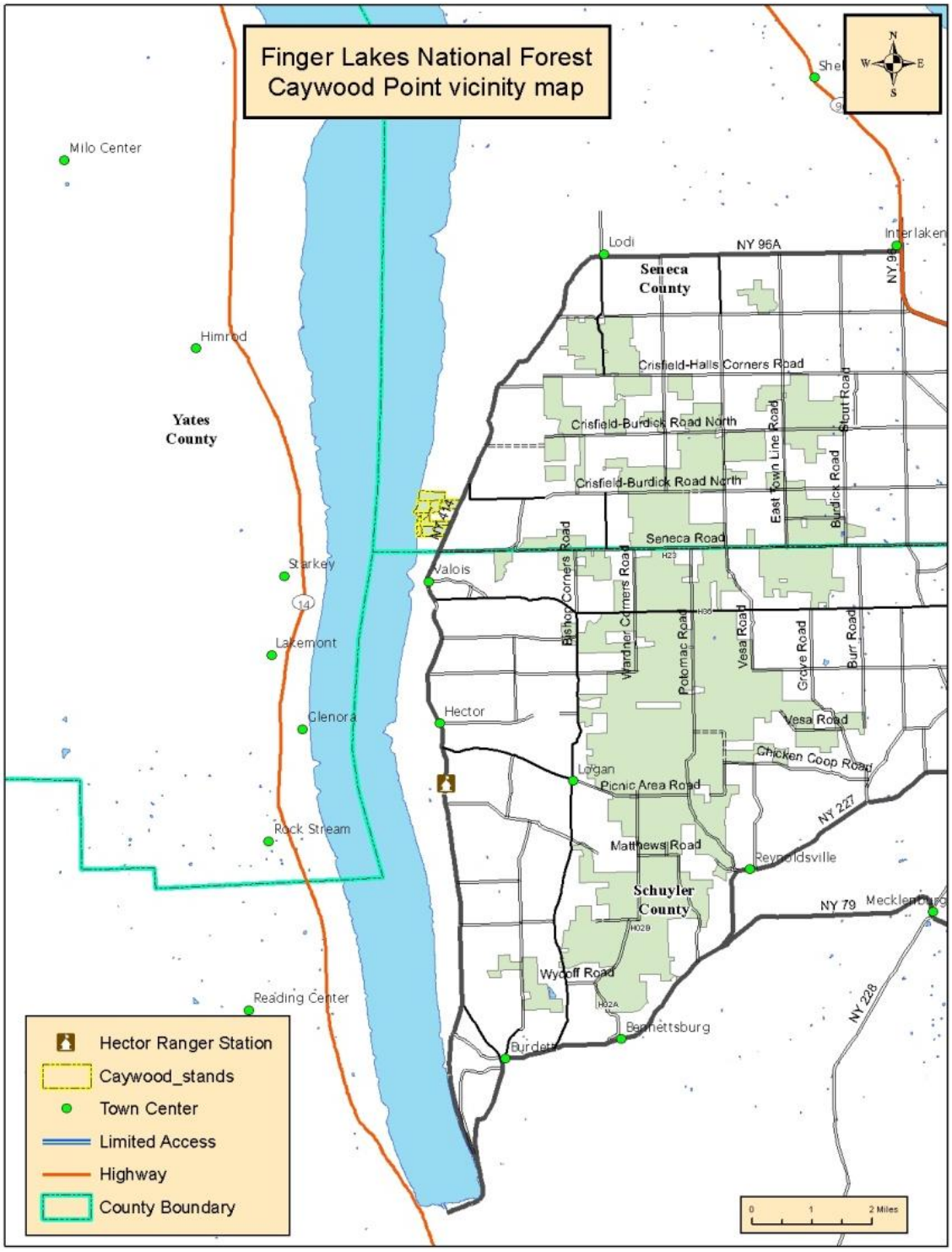
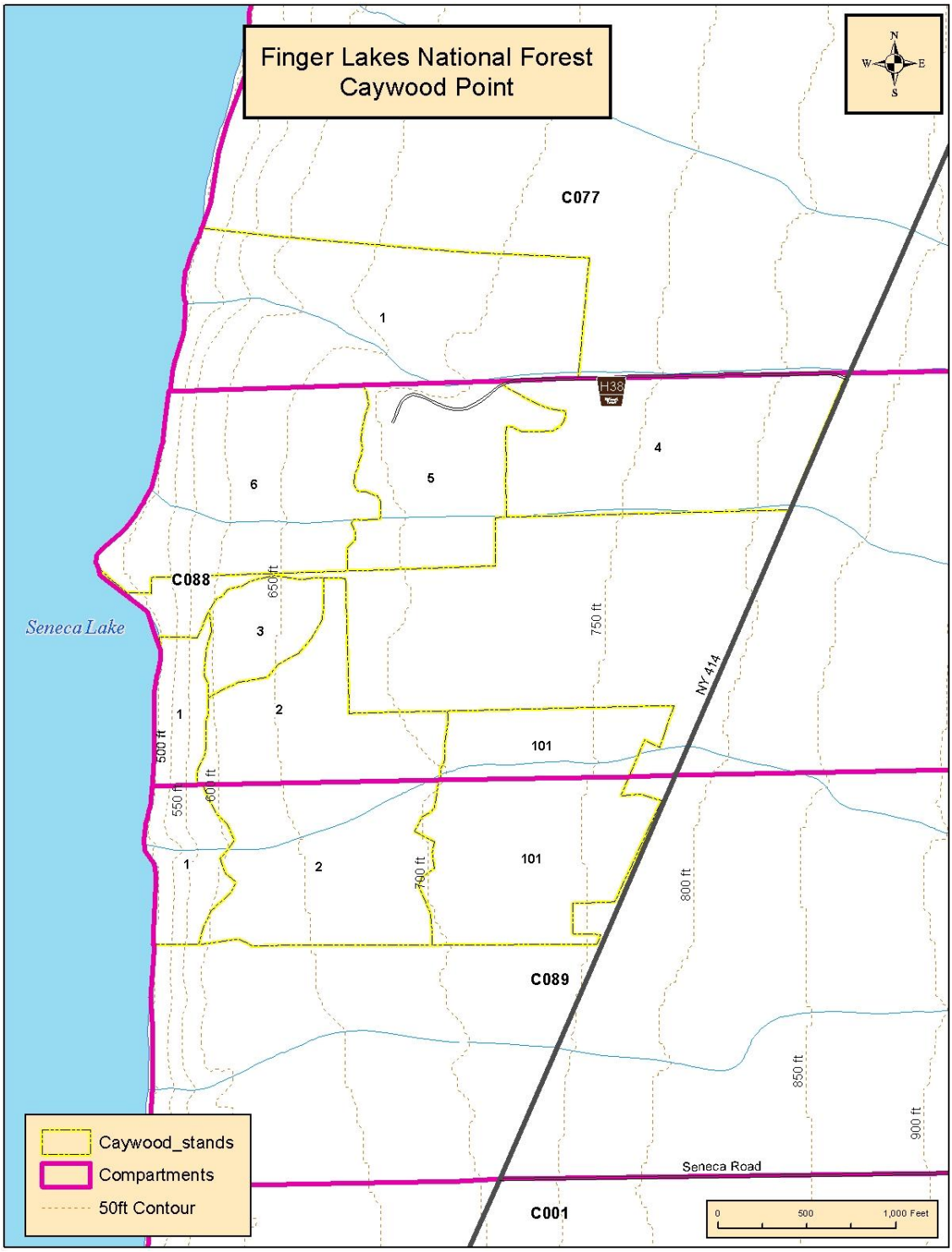


Figure 2—Close up map of Caywood point's associated compartments, stands roads and topography. Pink boundary lines represent compartment boundaries while the yellow lines represent the stands associated with that compartment.



Appendix B- Proposed chemicals

Imidicloprid tablets (Coretect)
Details for MERIT FXT TABLET INSECTICIDE
EPA Registration Number: 432-1457
Company Name: BAYER ENVIRONMENTAL SCIENCE
Address: 2 T. W. ALEXANDER DRIVE
P.O. Box: 12014
City, State Zip: RESEARCH TRIANGLE PARK, NC 27709
Current State (Date): Active - Conditionally Registered (SEP 14, 2006)
Alternate Name(s): CORETECT TREE AND SHRUB TABLETS: SILVASHIELD FORESTRY TABLET

Basal bark applications of dinotefuran (Safari)
Details for SAFARI 20 SG INSECTICIDE (TRUNK SPRAY ON HEMLOCKS FOR HEMLOCK WOOLLY ADELGID) EPA REG. NO. 33657-16-59639
EPA Registration No.: NY-100008
Expiration Date: 9/30/2012 [Under the New York State Administrative Procedures Act (SAPA), if a complete renewal application is received prior to the registration expiration date, the product will be considered registered until a registration decision is made and either a new certificate is issued or renewal is denied.]
Registration Status Date: 11/5/2012
Registration Status: REGISTERED
Company Name and Reg. No.: Valent U.S.A. Corporation [59639]
Use: NON-CROP
Restricted Use: No (not restricted)